

इंटरनेट

मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

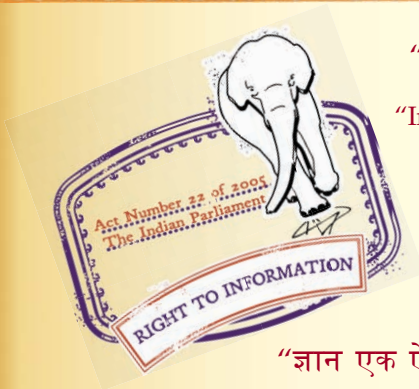
“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

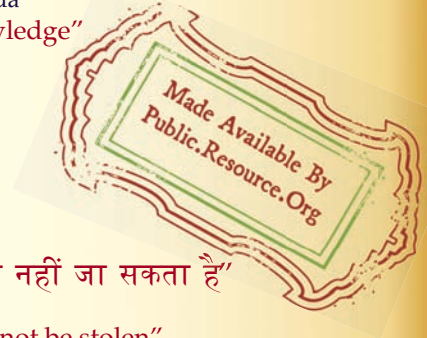
IS 367 (1993): Electric kettles and jugs for household and similar use [ETD 32: Electrical Appliances]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

BLANK PAGE



भारतीय मानक

घरेलू और समान उपयोगों के लिए बिजली की
केतली और जग की विशिष्टि

(चौथा पुनरीक्षण)

Indian Standard

ELECTRIC KETTLES AND JUGS FOR
HOUSEHOLD AND SIMILAR USE —
SPECIFICATION

(*Fourth Revision*)

UDC 641-542.12 — 83

© BIS 1993

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Indian Standard

ELECTRIC KETTLES AND JUGS FOR HOUSEHOLD AND SIMILAR USE — SPECIFICATION

(Fourth Revision)

1 SCOPE

1.1 This standard covers general, safety and performance requirements for electric kettles, jugs and other similar appliances for household and similar use having a rated capacity not exceeding 5 l and for connections for supplies at voltages not exceeding 250 V, ac, single phase or dc.

NOTE — Similar use denotes use in other than household areas, for example, inns, coffee-houses, tea rooms, small hotels etc, but only where the periods of use and the load are compatible with household use.

1.2 This standard does not apply to electrode type heating appliances dry or steam pressure sterilizers, coffee percolators, portable immersion heaters or storage water heaters.

2 REFERENCES

2.0 The following Indian Standards are necessary adjuncts to this standard :

<i>IS No.</i>	<i>Title</i>
302-2-15 (1993)	Safety of household and similar electrical appliance : Part 2 particular requirements, Section 15 Appliance for heating liquids
4827 : 1983	Electroplated coatings of nickel and chromium on copper and copper alloys (first revision)

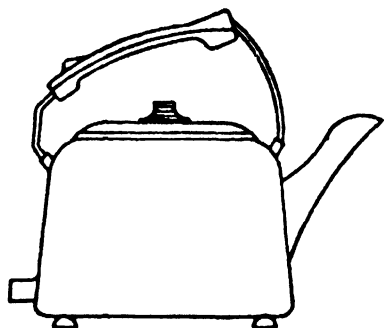


FIG. 1 KETTLE

3 TERMINOLOGY

3.1 The following terminology shall apply in addition to those given under 2 of IS 302-2-15 (1993).

3.2 Electric Kettle or Jug

A portable appliance for boiling water with means for pouring (either a lip or spout). Typical examples of kettle and jug are shown in Fig. 1 and 2.

3.3 Conditions of Adequate Heat Discharge

The conditions in which kettle and jugs for boiling water are operated with the container filled initially with a quantity of cold water equal to its rated capacity and covered with the lid provided.

4 GENERAL REQUIREMENTS

4.1 The clause 3 of IS 302-2-15 (1993) shall apply.

5 GENERAL NOTES ON TESTS

5.1 In addition to the conditions given in 4 of IS 302-2-15 (1993), the following conditions for the measurements shall apply unless otherwise specified.

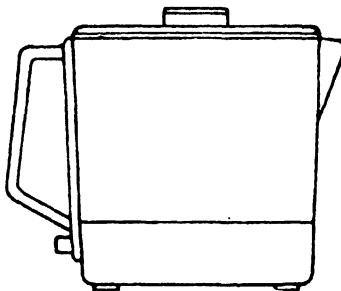


FIG. 2 JUG

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Electrical Appliances Sectional Committee had been approved by the Electrotechnical Division Council.

This standard covers general, safety and performance requirements of electric kettle and jugs for household and similar uses.

This standard was first revised in 1965 and second revision was made in 1977. The third revision was made in 1983. As per the decision of the third meeting of Electrotechnical Division Council, a separate safety standard on appliance for heating liquids has been brought out. In the fourth revision of this composite standard instead of giving details of safety requirements, reference has been made to safety standard IS 302-2-15 (1993) 'Safety of household and similar electrical appliances: Part 2 Particular requirements, Section 15 Appliance for heating liquids'. It is intended to cover some more performance requirement in future on the basis of future development within the country as also at the international level.

The details of the safety requirements are covered in IS 302-2-15 (1993) 'Safety of household and similar electrical appliances: Part 2 Particular requirements, Section 15 Appliance for heating liquids'.

While preparing this standard, assistance has been derived from IEC Publication 530 (1975), 'Methods of measuring the performance of electric kettles and jugs for household and similar use issued by the International Electrotechnical Commission.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

- Ambient temperature : $27 \pm 5^{\circ}\text{C}$
- Cold water temperature : $22 \pm 1^{\circ}\text{C}$
- Input : Rated input
- Testing room : Substantially drought free
- Placing of the appliance : On a black matt painted wooden support, projecting beyond the appliance by at least 50 mm on all sides, at least 30 cm away from walls.

5.2 For the measurement of **14** and **15**, a support with thermocouples is used consisting of a plywood board 20 mm thick and painted black matt. At intervals of 50 mm, copper disks 15 mm in diameter and 1 mm thick are embedded so that they are flush with the surface. The inner side of the disks is blackened and on their inner side fine-wire thermocouples are fastened.

6 RATING

6.1 Clause **5** of IS 302-2-15 (1993) shall apply.

6.2 The recommended rated capacity shall be one of the following :

- 1, 1.5, 2, 2.5, 3 and 5 letters.

6.3 The rated input shall not exceed 3.0 kW.

7 CLASSIFICATION

7.1 Clause **6** of IS : 302-2-15 (1993) shall apply.

8 MARKING

8.1 In addition to the provisions given in **7** of IS 302-2-15 (1993) the following shall apply.

8.1.1 The electric kettle or jug shall also be marked with following additional information:

- a) Rated capacity,
- b) Time to boil rated capacity of water,
- c) Minimum quantity of water that may be boiled (for kettle/jugs with immersion type heating element, and
- d) Thermal efficiency.

The information (b) and (c) may be given in a separate pamphlet or instruction sheet instead of marking on the name plate.

8.2 The kettle or jugs may also be marked with the Standard Mark.

9 SAFETY REQUIREMENTS

9.1 The kettle or jugs shall comply with the requirements given in **8** to **32** of IS : 302-2-15 (1993).

10 LIST MEASUREMENTS

10.1 The following measurements shall be carried out on kettle or jugs :

- Overall dimensions (Clause **11**)
- Mass (Clause **12**)
- Water capacity (Clause **13**)
- Time to boil one litre of water (Clause **14**)
- Time to boil water capacity (Clause **15**)
- Minimum quantity of water that can be boiled (Clause **16**)
- Temperatures of supporting surface (Clause **17**)
- Thermal efficiency (Clause **18**)
- Endurance (Clause **19**)
- Finish (Clause **20**)

11 OVERALL DIMENSIONS

11.1 Maximum overall dimensions of the appliance — either length, width and height or diameter and height — are measured and indicated in millimetres together with the general shape of the appliance (that is cylindrical, rectangular). Handles and any projections on the appliance itself are taken into account including control knobs, lids, cord guards of any flexible cord and appliance connectors of a cord set, if supplied with the appliance.

11.1.1 The overall dimensions measured shall be as declared by the manufacturer.

12 MASS

12.1 The mass of the empty appliance with flexible cord, if attached, is measured and indicated in kilograms to the nearest 0.1 kg and shall be as declared by the manufacturer.

13 WATER CAPACITY

13.1 The water capacity stated by the manufacturer is indicated in litres. In the absence of a stated water capacity the water container is filled. This quantity is measured and 90 percent thereof is indicated in litres to the nearest 0.1 litre.

Where the manufacturer states a water capacity less than the calculated value, the stated capacity is indicated.

13.1.1 The calculated value shall be not less than the rated capacity.

14 TIME TO BOIL ONE LITRE OF WATER

14.1 This measurement is made only on appliances having more than one litre water capacity. One litre of cold water is poured into the appliance which has been preconditioned at a temperature of 15 to 30°C. The appliance is switched on immediately, any control being set to its maximum position. The water temperature is measured by a watertight thermocouple situated 10 mm above the bottom centre of the water container. The time to boil 1.0 litre of water is the time taken to raise the temperature of the water 65°C above its initial value. The time is indicated in minutes and seconds to the nearest 10 s. The temperature of cold water shall be such that the final temperature shall not exceed 95°. The water should be properly stirred before measuring the temperature.

14.1.1 The measurement is repeated twice and the average of three readings is taken as time to boil 1.0 litre of water, which shall be not more than the value declared by the manufacturer.

15 TIME TO BOIL WATER CAPACITY

15.1 The test according to 14 is made with the quantity of water as indicated in 13.

15.1.1 The measurement is repeated twice and the average of the three readings is taken as time to boil water capacity, which should be not more than the value declared by the manufacturer.

16. MINIMUM QUANTITY OF WATER THAT CAN BE BOILED

16.1 The measurement is made only on appliances where the heating element is intended to be immersed.

The appliance is filled with cold water so that the major part of the heating element is just covered, unless the manufacturer's instructions give a minimum quantity of water, in which case this quantity is used.

With any control set to its maximum position, the appliance is switched on and the water is allowed to boil for 15 seconds after boiling has started or in the case of an automatic appliance until the thermostat operates.

If a safety device operates, the test is repeated with the increased quantity of water (in steps of 0.1 litre) necessary to ensure that the appli-

ance will boil the water for at least 15 seconds or the case of an automatic appliance until the thermostat operates. The quantity of water is measured and indicated in litres to the nearest 0.1 litre.

16.1.1 Minimum quantity of water that can be boiled shall be as declared by the manufacturer.

17 TEMPERATURE OF SUPPORTING SURFACE

17.1 For the measurements of 14 and 15, the appliance is placed on the support as described in 5 so that any external part of the appliance for which high temperatures may be expected can touch or be as close as possible to the disks. The temperatures of the disks are recorded and the maximum value is indicated in °C.

17.1.1 The temperature measured shall be not more than the value declared by the manufacturer.

18 THERMAL EFFICIENCY

18.1 The thermal efficiency, computed by taking the ratio of heat absorbed by water to the equivalent of electrical energy supplied. While measuring the time to boil water capacity, water capacity shall not be less than 90 percent of electric kettle/jugs, incorporating immersion type heating element and 70 percent for those having clamping type heating element.

NOTES

1 The water should be properly stirred before measuring the temperature.

2 The thermometer is arranged so that its bulb is approximately 10 mm above the major part of the heating element and that its stem projects through the spout, if this is not possible the stem is led through a hole into the lid or body of the kettle or jug.

3 The temperature of the cold water shall be such that the final temperature shall not exceed 95°C.

18.2 In case the thermal efficiency marked on the kettle/jug is more than that specified in 18.1, tolerance of -10 percent shall be allowed in this value subject to the provision that the actual efficiency shall in no case fall below the value specified in 18.1.

19 ENDURANCE

19.1 Electric kettles and jugs shall be so constructed that, in normal use, there shall be no electrical or mechanical failure that might impair compliance with this standard. The insulation shall not be damaged and contacts and connection shall not work loose as a result of heating, vibration etc. Moreover, overload protection devices if provided shall not operate under normal running conditions.

19.2 The kettle and jugs filled initially with cold water up to the rated capacity shall be connected to the supply and operated under conditions of adequate heat discharge, such that the input is 1.15 times, the maximum rated input which shall be maintained throughout the test. The kettle and jugs are operated for 96 h under these conditions.

19.2.1 After the test the kettle and jugs shall withstand the electric strength test specified in 16.4 of IS 302-1 (1979).

20 FINISH

20.1 Ferrous parts, the rusting of which might cause the appliance to fail to comply with this standard, shall be adequately protected against rusting.

Compliance is checked by the following test:

All grease is removed from the parts to be tested by immersion in carbon tetrachloride or trichlorethane for 10 minutes.

The parts are then immersed for 10 minutes in a 10 percent solution of ammonium chloride in water at a temperature of $27 \pm 5^\circ\text{C}$.

Without drying, but after shaking off any drops, the parts are placed for 10 minutes in a box containing air saturated with moisture at a temperature of $27 \pm 5^\circ\text{C}$.

After the parts have been dried for 10 minutes in a heating cabinet at a temperature of $100 \pm 5^\circ\text{C}$, their surfaces shall show no signs of rust.

Traces of rust on sharp edges and any yellowish film removable by rubbing are ignored.

For small helical springs and the like, and for parts exposed to abrasion, a layer of grease may provide sufficient protection against rusting. Such parts are only subjected to the test if there is doubt about the effectiveness of the grease film, and the test is then made without previous removal of the grease.

20.2 The external finish used on metal components shall be of a heat and moisture resisting nature and shall not be adversely effected by variations in temperature under normal operating conditions or during the endurance test. Copper, nickel and chromium electroplating coating shall conform to provisions as given in IS 4827 : 1983.

20.2.1 Compliance is checked for the following requirements according to the test method given in IS 1068 : 1985 'Specification for electroplated coatings of nickel and chromium on

iron and steel',

- a) Thickness of coating,
- b) Adhesion, and
- c) Corrosion.

NOTE — The thickness of electroplated coatings may be measured by BNF Jet test method or stripping method as given in Appendixes K and L of IS : 302-1 (1979). However, in case of a dispute the test shall be carried out as prescribed in IS 4827 : 1983.

21 TESTS

21.0 Category of Tests

Tests are classified as type, acceptance and routine tests.

21.1 Type Test

The test specified in Table 1 shall constitute type test and shall be carried out on two samples of kettle and jugs of the same type and rating selected preferably at random from a regular production lot. Before commencement of the tests, the kettle/jugs shall be visually examined and inspected for various visual defects in respect of components, parts and their assembly, construction, stability, marking, provisions for suitable terminals for supply connection, earthing and effectiveness of screw and connection. The external surface finish shall be even and free from finishing defects.

Table 1 Schedule of Type Tests

(Clause 21.1)

Sl No.	Tests	Clause Reference
1.	Safety requirement	9
2.	Overall dimensions	11
3.	Mass	12
4.	Water capacity	13
5.	Time to boil 1.0 l of water	14
6.	Time to boil water capacity	15
7.	Minimum quantity of water that can be boiled	16
8.	Temperature of supporting surface	17
9.	Thermal efficiency	18
10.	Endurance	19
11.	Finish	20

21.1.1 Criteria of Acceptance

All samples shall successfully pass all the type tests for providing conformity with the requirements of the standard. If any of the samples fails in any of the type tests, the testing authority at its discretion, may call for fresh samples

not exceeding twice the original number and subject them again for all tests or the test (s) in which failure(s) occurred. No failure should be permitted in the repeated test(s).

21.2 Acceptance Tests

The following shall constitute the acceptance test:

<i>Tests</i>	<i>Clause Reference</i> [of IS : 302-2-15 (1993)]
a) Protection against electric shock	8 to 32
b) Input	10
c) Temperature rise	11
d) Insulation resistance and leakage current at operating temperature	13
e) Moisture resistance	15
f) Insulation resistance and electric strength (after humidity treatment)	16

Title

Clause Reference
[of IS : 302-2-15
(1993)]

g) Provisions for earthing	27
h) Capacity	13
i) Time to boil water capacity	15

21.2.1 A recommended sampling procedure for acceptance tests is given in Annex B of IS : 302-1 (1979).

21.3 Routine Tests

The following test shall constitute the routine tests.

<i>Test</i>	<i>Clause Reference</i>
a) Protection against electric shocks	8 of IS : 302-2-15 (1993)
b) High voltage	13.3.2 of IS : 302-1 (1979)
c) Provisions for earthing	27 of IS : 302-2-15 (1993)

Standard Mark

The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act, 1986* to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Copyright

BIS has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of BIS. This does not preclude the free use, in the course of implementing the standard, of necessary details, such as symbols and sizes, type or grade designations. Enquiries relating to copyright be addressed to the Director (Publications), BIS.

Revision of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Handbook' and 'Standards Monthly Additions'. Comments on this Indian Standard may be sent to BIS giving the following reference:

Doc : No. ET 32 (3646)

Amendments Issued Since Publication

Amend No	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones : 331 01 31, 331 13 75

Telegrams : Manaksanstha
(Common to all Offices)

Regional Offices :

Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg
NEW DELHI 110002

Telephone

{ 331 01 31
{ 331 13 75

Eastern : 1/14 C. I. T. Scheme VII M, V. I. P. Road, Maniktola
CALCUTTA 700054

{ 37 84 99, 37 85 61
{ 37 86 26, 37 86 62

Northern : SCO 445-446, Sector 35-C, CHANDIGARH 160036

{ 53 38 43, 53 16 40
{ 53 23 84

Southern : C. I. T. Campus, IV Cross Road, MADRAS 600113

{ 235 02 16, 235 04 42
{ 235 15 19, 235 23 15

Western : Manakalaya, E9 MIDC, Marol, Andheri (East)
BOMBAY 400093

{ 632 92 95, 632 78 58
{ 632 78 91, 632 78 92

Branches : AHMADABAD. BANGALORE. BHOPAL. BHUBANESHWAR. COIMBATORE.
FARIDABAD. GHAZIABAD. GUWAHATI. HYDERABAD. JAIPUR. KANPUR.
LUCKNOW. PATNA. THIRUVANANTHAPURAM.